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Upcoming Events:

Maine Clean Communities Stakeholder Meeting,

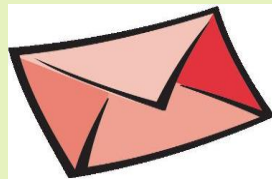
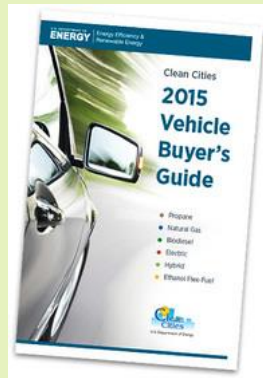
July 22, 2015, Portland, ME This meeting's topic is Autogas (aka propane). [Click here to register.](#)

Alt Energy Summit, July 25, 2015, Mt. Washington Auto Road, Gorham, NH

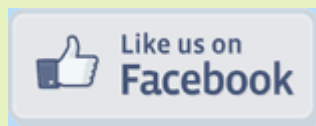
Celebrate this event's 40th anniversary! [Click here for the schedule.](#)

New Hampshire Celebrates Drive Electric Week, September 12,

2015, 8:30-noon, Concord, NH Due to Main Street construction, this year's event will be on the **lawn of the NH State House**, in front of the steps. Come view the wide selection of electric transportation available in our state. Event runs adjacent to the Concord Farmers Market too. Celebrate with us!



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**Tenth Annual AltWheels Fleet Day,
October 7, 2015, Norwood, MA** Hear presentations from those in the industry, talk with vendors or just peruse the alt fuel vehicle exhibit. A *no miss* annual event! For more information, visit: www.altwheels.org.

Funding Opportunities:



Electric Vehicle Charging Station (EVSE) Rebate offered!

The EVSE rebate program is designed to support development of EVSE at strategic locations to enable the operation of EVs throughout New Hampshire and connect to charging corridors in neighboring states. Targeted areas of deployment include interstate highways and other major transportation corridors, as well as key destinations such as tourist attractions, large retail centers and large employment centers.

The maximum rebate for DC fast chargers is \$12,000; and for "Level 2" chargers is \$5,000. Charging stations must be publicly accessible at all times. All rebates must be pre-approved and are subject to certain eligibility criteria. Funding for the rebate program is through the New Hampshire Office of Energy and Planning using U.S. Department of Energy funds, in partnership with NH DES and GSCCC. A total of \$49,000 is available for fiscal years 2015 and 2016.

For program guidance and a pre-approval application form please visit NHDES' [Drive Electric NH homepage](http://www.des.nh.gov) or visit www.des.nh.gov and look under "What's New."

News of Interest:



The GSCCC June stakeholder meeting featured presentations from three electric vehicle owners *and* this fine display of EVs!

Argonne Labs Report: Turn Engine Off Even During Brief Stops (from *National Idling Reduction Network News*)

Energetics Incorporated for Argonne National Laboratory has issued a report entitled "Stop and Restart Effects on Modern Vehicle Starting System Components—Longevity and Economic Factors", which verifies that the *old rules* don't apply to contemporary vehicles.

According to the study, unless the vehicle is vintage, drivers can save money by turning off the engine if they are stopped for more than 1 minute. (When stopped in traffic, however, the reports suggests motorists keep the engine on for safety reasons.) A typical driver will put minimal wear on starting-system components from additional daily start cycles and reduce fuel costs as well.

While starter-motor life mostly depends on the total number of start cycles, battery life depends on having full charge between most start events. On average, about 5 miles of driving is enough to recharge the battery. The study, which provides guidance on expected starter-motor and battery life, is available at [Argonne National](#)

Laboratory's website.

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A SmartWay tractor and trailer annually save 2,000 to 4,000 gallons of fuel and reduce CO₂ emissions by up to 20% as compared to similar trucks on the road. Learn more at www.epa.gov/smartway

Question of the Month: *What are the latest updates on hydrogen and fuel cell electric vehicle deployment?*

Answer: Fuel cell electric vehicles (FCEVs) have been around for a while, mostly in limited quantities and locations through demonstration projects. But these vehicles, with their potential to significantly cut petroleum consumption and reduce emissions, are starting to make their way into dealerships and onto roads across the country. Though the market for FCEVs is still in its infancy, many government organizations and private companies are working on research and deployment efforts to make hydrogen a widespread, viable, affordable, and safe alternative vehicle fuel.

Below are some of the recent activities related to FCEV commercialization:

Vehicle Availability

FCEVs are beginning to enter the consumer market in certain regions in the United States and around the world. Hyundai introduced the 2015 Tucson Fuel Cell in California last year for lease, and Toyota Motor Company announced they will release the 2016 Mirai for sale this October at eight California dealerships that were specially selected for their experience with alternative fuels and their proximity to existing hydrogen fueling stations. Vehicle original equipment manufacturers (OEMs) such as BMW, Ford, General Motors, Honda, Mercedes/Daimler, Nissan, and Volkswagen are expecting to launch FCEV production vehicles in select regions of the country in the coming years. Other automakers continue to introduce their FCEVs through demonstration projects. The FCEV market is also growing for buses, ground support equipment, medium- and heavy-duty vehicles, back-up power, prime power applications, and continues to be strong for forklifts.

While OEMs are offering affordable lease options, some of which include the cost of fuel, FCEVs are still expensive. However, production costs have decreased significantly in recent years and FCEVs are expected to be cost-competitive with conventional vehicles in the coming years.

Hydrogen Fueling Infrastructure

As the FCEV market expands, hydrogen fueling infrastructure will need to grow to match demand. Most of the hydrogen stations available today have been built to support OEM FCEV demonstration projects. According to the Alternative Fuels Data Center's (AFDC) Alternative Fueling Station Locator (http://www.afdc.energy.gov/fuels/hydrogen_locations.html), there are 12 publicly accessible hydrogen stations in the United States, with many more in the planning stages. According to the California Fuel Cell Partnership (<http://cafcp.org/>), there are

49 more stations in development in California that will be publically available. Development efforts are also underway in Connecticut, Hawaii, Maine, Massachusetts, New Jersey, New York, Rhode Island, and Vermont.

Like the vehicles, the high cost of fueling equipment remains a key challenge. Hydrogen station costs can vary significantly based on hydrogen feedstock, station capacity, utilization, proximity to production, and available incentives. The National Renewable Energy Laboratory's (NREL) Hydrogen Station Cost Calculator estimates that stations can cost between \$2 and \$5 million. However, like FCEVs, as the demand grows, the cost of hydrogen fueling equipment will decrease and the number of stations will increase.

Codes, Standards, and Incentives

The widespread deployment of FCEVs and the associated network of hydrogen fueling stations requires the development, maintenance, and harmonization of codes, standards, and regulations to keep up with the technology. These efforts are ongoing and are supported by the U.S. Department of Energy (DOE), as well as domestic and international organizations.

Incentives will also continue to be important to promote and maintain a market for hydrogen and FCEVs. California is leading in the number of relevant state incentives. For instance, to meet the objectives of California's Zero Emission Vehicle (ZEV) Program, the California Energy Commission's Alternative and Renewable Fuel and Vehicle Technology Program (<http://www.energy.ca.gov/drive/>) is allocating \$20 million annually for the construction of at least 100 public hydrogen stations in California by January 1, 2024. In addition, California's Clean Vehicle Rebate Project offers up to \$5,000 for the purchase or lease of approved FCEVs (<http://energycenter.org/clean-vehicle-rebate-project>). Nine other states (Connecticut, Maine, Maryland, Massachusetts, New Jersey, New York, Oregon, Rhode Island, and Vermont) have also adopted California's ZEV mandate to increase the number of ZEVs, including FCEVs, on the roads.

Ongoing Research and Development

Significant research and development efforts by DOE, the national laboratories, and other H2USA partners have brought the hydrogen industry to where it is today (<http://energy.gov/eere/fuelcells/accomplishments-and-progress>). Through their Fuel Cell Technologies Office (<http://energy.gov/eere/fuelcells/fuel-cell-technologies-office>), DOE continues to support research in the areas of hydrogen production, delivery, and storage, as well as technology validation, manufacturing, and market transformation.

Additional Resources

- AFDC's Hydrogen page (<http://www.afdc.energy.gov/fuels/hydrogen.html>) provides basic information on hydrogen, FCEVs, and the associated infrastructure.
- AFDC's Alternative Fuel and Advanced Vehicle Search (<http://www.afdc.energy.gov/vehicles/search/>) allows users to look for available FCEVs.
- H2USA, a public-private partnership to promote hydrogen and FCEV commercialization and adoption, maintains a FCEV page (<http://h2usa.org/fuel-cell-electric-vehicles>).
- NREL's Fuel Cell and Hydrogen Technology Validation page (http://www.nrel.gov/hydrogen/proj_tech_validation.html) includes evaluation and performance review data on various FCEVs in a real-world setting, as well as hydrogen station performance, maintenance, cost, and safety data.
- NREL's report, *Hydrogen Station Cost Estimates* (<http://www.nrel.gov/docs/fy13osti/56412.pdf>) outlines the costs associated with hydrogen fueling stations.
- Argonne National Laboratory's Hydrogen Refueling Station Analysis Model (HRSAM; http://hydrogen.energy.gov/h2a_delivery.html) can be used to calculate the cost of hydrogen stations.
- NREL's Hydrogen Financial Analysis Scenario Tool (H2FAST; <http://www.nrel.gov/hydrogen/h2fast/>) can also provide useful information on the cost of hydrogen stations.
- DOE's website (<http://energy.gov/eere/fuelcells/safety-codes-and-standards>) covers relevant safety, codes, and standards.
- AFDC's Hydrogen Laws and Incentives page (<http://www.afdc.energy.gov/fuels/laws/HY>) is a searchable tool with information on state regulations and incentives pertaining to hydrogen.

Clean Cities Technical Response Service Team
technicalresponse@icfi.com
800-254-6735